

How do I find the distance from A to B?

$$|A - B| \quad |B - A|$$

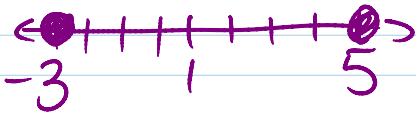
$$|-10 - 45|$$

$$|A - B| = AB$$

What do these mean?

$$|x - 1| = 4$$

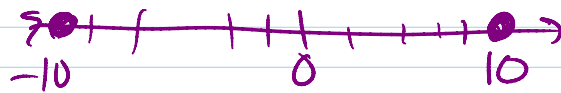
The distance from x to 1 is 4 units



$$|x| = |x - 0|$$

$$|x| = 10$$

The distance between x and 0 is 10 units.



Absolute value definition:

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

$$|4| = 4 \quad |100| = 100$$

$$|-5| = - -5 = 5 \quad |-17| = - -17 = 17$$

Solve for x

$$|x| = 16$$

$$|x - 2| = 10$$

Solve for x

$$|x| = 16$$

pos. $x = 16$ or neg. $x = -16$

$$|x-2| = 10$$

$x-2=10$ $+2+2$ $x=12$ or $x-2=-10$ $x=-8$

$$\frac{3|x+4|}{3} = \frac{15}{3}$$

$$|x+4| = 5$$

$x+4=5$ $x=-1$ or $x+4=-5$ $x=-9$

$$\frac{6|2x-1|}{6} = \frac{48}{6}$$

$$|2x-1| = 8$$

$2x-1=8$ $+1+1$ $2x=9$ $x=9/2$ or $2x-1=-8$ $+1+1$ $2x=-7$ $x=-7/2$

$$|x+2| = -5$$

No Solution

$$\frac{3|x+1|}{3} + \frac{8}{-8} = \frac{5}{-8}$$

$$|x+1| = -1$$

No Solution

$$\frac{-2|x+4|}{-2} = \frac{-6}{-2}$$

$$|x+4| = 3$$

$x+4=3$ $x=-1$ or $x+4=-3$ $x=-7$

$$|x+2| = 5+x$$

pos. $x+2=5+x$ $-x$ $2=5$ False

neg. $x+2 = -(5+x)$ $x+2 = -5-x$ $+x$ $+x$ $2x+2 = -5$ $2x = -7$ $x = -7/2$